

1. PURPOSE. This circular provides noise level data for aircraft certificated under 14 CFR part 36. Noise level data for foreign aircraft certificated to ICAO Annex 16 standards are also provided in a separate appendix for informational purposes. Other appendices list selected configurations of U.S. certificated aircraft and provide listings of noise levels ranked in descending order.

2. CANCELLATION. Advisory Circular 36-1F, Noise Levels for U.S. Certificated and Foreign Aircraft, dated June 5, 1992, is canceled.

3. BACKGROUND. The agency's regulatory program for airplane noise requires the quantification of aircraft noise levels. Progress in the control and abatement of aircraft noise continues to be made to achieve further relief and protection to the public. This updated Advisory Circular, containing certificated aircraft noise levels, will provide both private and public exposure to this progress, as well as offering a common noise level reference for potential future reductions.

4. NOISE LEVELS. Noise levels measured during type certification under 14 CFR part 36 and ICAO Annex 16 are presented in Appendices 1 through 11. Formulas for calculating the appropriate 14 CFR part 36 noise level requirements, as contained in sections C36.5, F36.301, G36.301, H36.305, and J36.305 follow the applicable appendix.

Appendix 1 provides noise levels of turbojet powered airplanes, measured during type certification under 14 CFR part 36, Appendix C. This appendix includes tabulations of engine model, maximum takeoff weights, landing weights, flap settings, the "Stage" with which the airplane complies, and the measured noise in Effective Perceived Noise Level (EPNdB). Data are not presented for all of the maximum certificated takeoff weights for each airplane type. Rather, the data presented generally represent the highest and lowest maximum certificated takeoff weight.

Airplane noise levels are shown as complying with either Stage 2 or Stage 3. A "Stage 2 airplane" means an airplane that has been shown under 14 CFR part 36 to comply with the Stage 2 noise levels prescribed in section C36.5 of Appendix C (including use of the applicable tradeoff provisions) and that does not comply with the requirements for a Stage 3 airplane. A "Stage 3 airplane" means an airplane that has been shown under 14 CFR part 36 to comply with Stage 3 noise levels prescribed in section C36.5 of Appendix C (including use of the applicable tradeoff provisions).

As required by Part 36, certification noise levels for approach are those which are most critical from a noise standpoint, for the airplane configurations used to show compliance with the landing requirements in the airworthiness regulations constituting the type certification basis of the airplane. Takeoff certification noise levels are presented for takeoff with thrust cutback unless there is an asterisk (*) in the "NOTES" column, in which case full takeoff thrust certification noise levels are presented.

It should be noted that the sideline noise levels are generally presented for the current 450-meter distance. However, some four-engine airplane configurations were certificated to the earlier 650-meter standard; these configurations are denoted with a double asterisk (**) in the "NOTES" column.

Since the original measurement locations and noise test conditions cited in 14 CFR part 36, on November 18, 1969, have been amended through the years, the noise levels contained herein are for the measurement locations and noise test conditions applicable at the time of certification. In each case, the measured data have been corrected to sea level, 77 ° F, 70% relative humidity conditions using the procedures outlined in 14 CFR part 36. Specific information providing more detail on either the measurement locations or noise test conditions, if available, are indicated by the notes accompanying each listing. Blank spaces or lack of notes in the report indicate the data were not available.

Appendix 2 provides noise levels of foreign turbojet powered airplanes certificated to ICAO Annex 16, Chapters 2 and 3. These noise levels are provided for informational purposes. Airplanes certificated to both 14 CFR part 36 and ICAO Annex 16 are only listed in Appendix 1.

Appendix 3 provides a listing of U.S. certificated Stage 3 turbojet powered airplanes. These airplanes are also included in Appendix 1.

Appendix 4 and 5 represent selected listings of noise levels for turbojet powered airplanes certificated under 14 CFR part 36, Appendix C. Appendices 4 and 5 provide listings of takeoff and approach noise levels in EPNdB, respectively, in descending order. Representative models of each airplane are listed, using the maximum takeoff weight available. These listings are presented as a convenience in locating noise level data on specific airplane models. For a more detailed listing on variations of a representative model, see Appendix 1.

Appendix 6 contains noise levels of propeller-driven transport category airplanes. Noise levels measured during type certification were obtained under 14 CFR part 36, Appendix C. This appendix includes tabulations of maximum takeoff weights, landing weights, engine type, horsepower, propeller type, propeller diameter, and flap settings. The "Stage" with which the airplane complies is also provided, as well as the Effective Perceived Noise Level (EPNdB).

Appendix 7 lists the certificated airplane noise levels for propeller-driven small airplanes certificated under 14 CFR part 36, Appendix F. This appendix includes a tabulation of maximum takeoff weights, landing weights, engine type, horsepower, propeller type and propeller diameter. The measured A-weighted sound levels (dBA) for flyovers have been corrected to sea level 77 ° F, 70% relative humidity conditions where required by 14 CFR part 36, Appendix F.

Appendix 8 lists the certificated airplane noise levels for propeller-driven small airplanes and commuter category airplanes certificated under 14 CFR part 36, Appendix G. This appendix includes a tabulation of maximum takeoff weights, landing weights, engine type, horsepower, propeller type and propeller diameter, and the noise level in dB(A). Note that the 14 CFR part 36, Appendix G noise certification requirements for propeller-driven small airplanes and commuter category airplanes superseded those of 14 CFR part 36, Appendix F for noise certification tests conducted on or after December 22, 1988.

Appendix 9 contains noise levels for propeller-driven small airplanes certificated under ICAO Annex 16, Chapter 6. These noise levels are listed for informational purposes.

Appendix 10 lists the certificated noise levels for helicopters certificated under 14 CFR part 36, Appendix H. Helicopter noise levels are classified as either Stage 1 or Stage 2. A "Stage 2" helicopter means a helicopter which has been shown under 14 CFR part 36 to comply with the

Stage 2 noise levels prescribed in section H36.305 of Appendix H (including use of applicable tradeoff provisions).

Appendix 11 lists the certificated noise levels for helicopters certificated under 14 CFR part 36, Appendix J. Appendix J prescribes alternative (to 14 CFR part 36 Appendix H) noise certification requirements for helicopters in the primary, normal, transport, and restricted categories having maximum certificated takeoff weight of not more than 6,000 pounds.

Appendix 12 defines the abbreviations that are used in this Advisory Circular.

5. Distribution.

Requests for additional copies of this Advisory Circular should be sent to:

**U.S. Department of Transportation
Subsequent Distribution Office
Ardmore East Business Center
3341 Q 75th Avenue
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Requests to be placed on the mailing list to receive future revisions of this Advisory Circular should be sent to:

**U.S. Department of Transportation
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6. REVISIONS. The airplane noise level listings of this Advisory Circular will be revised and updated periodically.

James D. Erickson

Director, of Environment and Energy

LIST OF APPENDICES

Appendix 1 Aircraft Noise Data for United States Certificated Turbojet Powered Aircraft

Appendix 2 Aircraft Noise Data for Foreign Certificated Turbojet Powered Aircraft

Appendix 3 Stage 3 Turbojet Powered Aircraft

Appendix 4 Aircraft Noise Certification Levels in Descending EPNdB for U.S. Certificated Turbojet Powered Aircraft — Takeoff

Appendix 5 Aircraft Noise Certification Levels in Descending EPNdB for U.S. Certificated Turbojet Powered Aircraft — Approach

Appendix 6 Aircraft Noise Data for Propeller Driven Aircraft Certificated in the Transport Category

Appendix 7 Aircraft Noise Data for U.S. Certificated Propeller Driven Small Airplanes (14 CFR Part 36, Appendix F)

Appendix 8 Aircraft Noise Data for U.S. Certificated Propeller Driven Small Airplanes and Commuter Category Airplanes (14 CFR part 36, Appendix G)

Appendix 9 Aircraft Noise Data for Foreign Certificated Propeller Driven Small Aircraft

Appendix 10 Aircraft Noise Data for U.S. Certificated Helicopters (14 CFR part 36, Appendix H)

Appendix 11 Aircraft Noise Data for U.S. Certificated Helicopters (14 CFR part 36, Appendix J)

Appendix 12 Abbreviations